

### **REMARKS**

The Office Action of July 19, 2010 has been reviewed and the Examiner's comments carefully considered. Claims 83, 85, and 87-168 are pending in this application. Claims 123-162 and 166-168 have been withdrawn in response to the Restriction Requirement issued April 6, 2009. Independent claim 83 has been amended to recite a P range of 0.2% or less and include the 0.2 ~ 1.2% Cr range of dependent claim 87 and claim 87 has been amended accordingly. Support for these amendments may be found in the original application on page 16, line 7 and page 21, line 11. The Cu range of independent claim 95 has been changed from 0.01 ~ 0.2 % to 0.052 ~ 0.2%. Support for this amendment may be found in Table 7. Independent claim 108 has been amended to include the limitation of dependent claim 111, which has been canceled, and to include a limitation that the steel sheet have an Aging Index (AI) of 30 MPa or less. Support for this amendment may be found on page 34, lines 8-10. New claims 169 and 170 have been added. Support for these claims may be found on page 16, lines 15 and 16 and lines 13-15, respectively.

Claims 83, 85, 87-122, and 163-165 stand rejected under 35 U.S.C. §103(a) as being obvious over International Patent Application Publication No. WO 2003/031670 to Murakami et al. or Japanese Patent Application Publication No. JP 10-158782 to Kodoma. The Examiner asserts that both Murakami and Kodoma teach a composition overlapping the compositions recited in independent claims 83, 95, and 108 and that it would have been obvious to a person skilled in the art to select the narrower claimed range from the broader disclosed ranges because Murakami and Kodoma teach the same utility as the present invention. Further, the Examiner asserts that Murakami teaches similar processing to that disclosed for the inventive steel and, thus, it would be expected by a person skilled in the art, based on the overlapping compositions and processing, that the steel of Murakami would have the same type and size precipitates as recited in independent claims 83, 95, and 108. Kodoma is also asserted to teach the type and size precipitates recited in independent claims 83, 95, and 108.

Amended independent claim 83 recites a Cr range of 0.2 ~ 1.2%. Murakami teaches a Cr range of 0.0005 – 0.100% (page 7, line 5) and Kodoma teaches a Cr range 0.1 % or less (paragraph [0021]). Therefore, the compositions of Murakami and Kodoma do not overlap

the composition of amended claim 83 and, thus, do not render it obvious. Claims 85, 87-94, 163, 169, and 170, being dependent on claim 83 and further defining the invention, are also not rendered obvious by Murakami or Kodoma for at least the same reasons.

Amended independent claim 95 recites a Cu range of 0.052 ~ 0.2% while Murakami teaches a Cu range of 0.0005 – 0.050% (page 7, line 3). Therefore, the composition of Murakami does not overlap the composition of amended claim 95 and, thus, does not render it obvious. Claims 96-107 and 164, being dependent on claim 95 and further defining the invention, are also not rendered obvious by Murakami for at least the same reasons.

The composition recited in independent claim 95 specifically does not contain Mn and, thus, does not contain MnS precipitates. Throughout the specification, Kodoma emphasizes the importance of MnS precipitates in providing the beneficial properties of the disclosed alloy. There is nothing in Kodoma that teaches or suggests that, absent the MnS precipitates, the steel would have the beneficial properties disclosed therein. Therefore, a person skilled in the art would not find it obvious to select a narrower composition that excludes Mn, which is taught by Kodoma to be an essential element, from the broad disclosed composition of Kodoma in order to achieve the same properties and utility as the disclosed composition as suggested by the Examiner. Thus, Kodoma does not render amended independent claim 95 obvious. Claims 96-107 and 164, being dependent on claim 95 and further defining the invention, are also not rendered obvious by Kodoma for at least the same reasons.

Amended independent claim 108 includes limitations that the MnS, CuS, and (Mn, Cu)S precipitates have an average size of 0.2  $\mu\text{m}$  or less and number  $2 \times 10^6$  or more and that the steel sheet have an Aging Index (AI) of 30 MPa or less. Neither Murakami nor Kodoma teach or suggest these limitations. With respect to the precipitates, Murakami does not in any way indicate that the size or quantity of precipitates affects the beneficial properties of steel and, specifically, does not indicate that the size or quantity of precipitates has any effect on formability and/or aging. Kodoma teaches precipitate sizes ranging from 0.05 – 2  $\mu\text{m}$ , wherein the majority of the precipitates are larger than 0.2  $\mu\text{m}$  (paragraph [0033] and Fig. 1). Further, Kodoma does not in any way indicate that the quantity of precipitates affects the beneficial

properties of steel and, specifically, does not indicate that the size or quantity of precipitates has any effect on formability and aging.

With respect to the Aging Index, neither Murakami nor Kodoma teach that the disclosed steels have an Aging Index of less than 30 MPa. In fact, Kodoma does not even consider or discuss the aging properties of the disclosed steel.

Therefore, based on the teachings of Murakami and Kodoma, a person skilled in the art would not be motivated to select the narrower claimed composition of amended independent claim 108 from the broader disclosed compositions of Murakami and Kodoma and process the steel to have the fundamentally different microstructural and aging properties recited in amended claim 108. There is nothing in either of these references that suggests that such modifications would result in the beneficial formability and aging resistance of the present inventive steel.

Thus, neither Murakami nor Kodoma render amended independent claim 108 obvious. Claims 109-110, 112-122, and 165, being dependent on claim 108 and further defining the invention, are also not obvious for at least the same reasons.

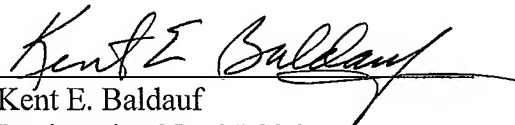
In addition, Applicants assert that Murakami and Kodoma do not obviate the present invention because they do not teach the same utility as the present invention. The present invention is a steel sheet for an automobile having improved formability and aging resistance without adding Ti or Nb to form an interstitial free (IF) steel. Murakami, on the other hand, is directed to thin steel for a can and particularly focuses on the effect of the composition and microstructure on the weld strength and the suitability of the disclosed alloy for providing a weld having adequate strength and ductility. It does not teach utility of the disclosed steel as a steel having a low aging index and/or the good overall formability that is necessary to manufacture more complicated automotive parts. Kodoma is directed to steel for a shadow mask and teaches that the steel composition and microstructure provides good punchability. Again, this is not a steel developed to have utility as a steel for forming complicated automotive parts. The steels taught in these two references are only taught to have utility for applications requiring little (a can) or no formability (a shadow mask) and neither reference teaches or in any way suggests that these steels would have the same utility as the steel of the present invention for

applications requiring enhanced formability (automotive parts). Therefore, a person skilled in the art would not be motivated to start with the broad compositions disclosed in these references when developing the claimed steel for the automotive industry. Further, the claimed composition was not selected from the broad, disclosed compositions of Murakami and Kodoma to optimize the steel for providing the disclosed utilities, strong welds and good punchability, but was instead independently selected to provide different utility, namely, low aging and good formability.

For all of these reasons, Applicants assert that neither Murakami nor Kodoma render independent claims 83, 95, and 108 obvious. Claims 85, 87-94, 96-107, 109-110, 112-122, 163-165, 169, and 170, being dependent on claims 83, 95, or 108 and further defining the invention, are also not obvious for at least the same reasons.

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of claims 83, 85, 87-110, 112-122, 163-165, 169, and 170 are respectfully requested.

Respectfully submitted,  
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